IT IS CLAIMED

1. A method for forwarding channel MAP messages to selected channels in an access network, the access network including a plurality of upstream and downstream channels for providing communication between network nodes and a Head End of the access network, the Head End including at least one interface for accessing the upstream and downstream channels, the method comprising:

identifying a first channel MAP message associated with a first upstream channel;

identifying at least one downstream channel on which the first channel MAP message is to be transmitted, wherein each identified downstream channel is associated with a respective interface; and

forwarding a copy of the first channel MAP message to each of the interfaces associated with each of the identified downstream channels.

2. The method of claim 1 further comprising forwarding a copy of the first channel MAP message only to each of the interfaces associated with each of the identified downstream channels, wherein each of the identified downstream channels communicates with at least one respective network node configured to communicate with the Head End via the first upstream channel.

3. The method of claim 1 further comprising transmitting the first channel MAP messages only on the identified downstream channels, wherein each of the identified downstream channels communicates with at least one respective network node configured to communicate with the Head End via the first upstream channel

4. The method of claim 1 wherein each interface corresponds to a respective port on a respective line card.

5. The method of claim 4 further comprising:

forwarding a first copy of the first channel MAP message to a first line card associated with a first identified downstream channel; and

forwarding a second copy of the first channel MAP message to a second line card associated with a second identified downstream channel;

the first line card being different than the second line card.

6. The method of claim 1 wherein said at least one downstream channel identifying includes selecting a particular downstream channel as an identified downstream channel in response to a determination that the particular downstream channel is used to communicate with at least one network node which is configured to use the first upstream channel to communicate with the Head End.

7. The method of claim 1 wherein the identified at least one downstream channel includes only selected downstream channels which are used to communicate with network nodes configured to use the first upstream channel to communicate with the Head End.

8. The method of claim 1 further comprising storing membership information at the Head End, the membership information relating to specific upstream and downstream channels being used by selected network nodes to communicate with the Head End.

9. The method of claim 8 wherein the membership information includes:

a first portion of information for identifying a particular network node;

a second portion of information for identifying an upstream channel used by the network node; and

a third portion of information for identifying a downstream channel used by the network node.

10. The method of claim 1 further comprising storing activity information at the Head End, the activity information identifying selected upstream channels in the access network, and further identifying, for each one of the selected upstream channels, any downstream channels which are being used to communicate with network nodes which are configured to communicate with the Head End via one of the selected upstream channels.

11. The method of claim 1 wherein said access network is a cable network implemented in accordance with a DOCSIS standardized protocol, and wherein said network nodes are cable modems.

12. A method for transmitting channel MAP messages to selected channels in an access network, the access network including a plurality of upstream and downstream channels for providing communication between network nodes and a Head End of the access network, the Head End including at least one interface for accessing the upstream and downstream channels, the method comprising:

identifying a first channel MAP message associated with a first upstream channel;

identifying particular downstream channels over which the first channel MAP message is to be transmitted, wherein each identified downstream channel is associated with a respective interface;

each of the identified downstream channels being used to communicate with at least one respective network node adapted to communicate with the Head End via the first upstream channel; and

transmitting the first channel MAP messages over the identified downstream channels.

13. The method of claim 12 further comprising forwarding a copy of the first channel MAP message only to each of the interfaces associated with each of the identified downstream channels, wherein each of the identified downstream channels communicates with at least one respective network configured to communicate with the Head End via the first upstream channel.

14. The method of claim 12 wherein each interface corresponds to a respective port on a respective line card.

15. The method of claim 14 further comprising:

forwarding a first copy of the first channel MAP message to a first line card associated with a first identified downstream channel; and

forwarding a second copy of the first channel MAP message to a second line card associated with a second identified downstream channel;

the first line card being different than the second line card.

16. The method of claim 12 wherein said selected downstream channel identifying includes selecting a particular downstream channel as an identified downstream channel in response to a determination that the particular downstream channel is used to communicate with at least one network node which is configured to use the first upstream channel to communicate with the Head End.

17. The method of claim 12 wherein the identified downstream channels include only selected downstream channels which are used to communicate with network nodes configured to use the first upstream channel to communicate with the Head End.

18. The method of claim 12 wherein said access network is a cable network implemented in accordance with a DOCSIS standardized protocol, and wherein said network nodes are cable modems.

19. In a access network having at least one downstream load sharing group of downstream channels and at least one upstream load sharing group of upstream channels, a method for performing channel MAP message forwarding comprising forwarding a selected channel MAP message associated with a particular upstream channel to selected downstream channels in the downstream load sharing group.

20. The method of claim 19 wherein the selected downstream channels include only those downstream channels which are used to communicate with network nodes that are configured to use the particular upstream channel to communicate with a Head End of the access network.

21. The method of claim 19 wherein said access network is a cable network implemented in accordance with a DOCSIS standardized protocol, and wherein said network nodes are cable modems.

22. A computer program product for forwarding channel MAP messages to selected channels in an access network, the access network including a plurality of upstream and downstream channels for providing communication between network nodes and a Head End of the access network, the Head End including at least one interface for accessing the upstream and downstream channels, the computer program product comprising:

a computer usable medium having computer readable code embodied therein, the computer readable code comprising:

computer code for identifying a first channel MAP message associated with a first upstream channel;

computer code for identifying at least one downstream channel on which the first channel MAP message is to be transmitted, wherein each identified downstream channel is associated with a respective interface; and

computer code for forwarding a copy of the first channel MAP message to each of the interfaces associated with each of the identified downstream channels.

23. The computer program product of claim 22 further comprising computer code for forwarding a copy of the first channel MAP message only to each of the interfaces associated with each of the identified downstream channels, wherein each of the identified downstream channels communicates with at least one respective network node configured to communicate with the Head End via the first upstream channel.

24. The computer program product of claim 22 further comprising computer code for transmitting the first channel MAP messages only on the identified downstream channels, wherein each of the identified downstream channels communicates with at least one respective network node configured to communicate with the Head End via the first upstream channel

25. The computer program product of claim 22 wherein each interface corresponds to a respective port on a respective line card.

26. The computer program product of claim 25 further comprising:

computer code for forwarding a first copy of the first channel MAP message to a first line card associated with a first identified downstream channel; and

computer code for forwarding a second copy of the first channel MAP message to a second line card associated with a second identified downstream channel;

the first line card being different than the second line card.

27. The computer program product of claim 22 wherein said downstream channel identifying code includes computer code for selecting a particular downstream channel as an identified downstream channel in response to a determination that the particular downstream channel is used to communicate with at least one network node which is configured to use the first upstream channel to communicate with the Head End.

28. The computer program product of claim 22 wherein the identified at least one downstream channel includes only selected downstream channels which are used to communicate with network nodes configured to use the first upstream channel to communicate with the Head End.

29. The computer program product of claim 22 further comprising computer code for storing membership information at the Head End, the membership information relating to specific upstream and downstream channels being used by selected network nodes to communicate with the Head End.

30. The computer program product of claim 29 wherein the membership information includes:

a first portion of information for identifying a particular network node;

a second portion of information for identifying an upstream channel used by the network node; and

a third portion of information for identifying a downstream channel used by the network node.

31. The computer program product of claim 22 further comprising computer code for storing activity information at the Head End, the activity information identifying selected upstream channels in the access network, and further identifying, for each one of the selected upstream channels, any downstream channels which are being used to communicate with network nodes which are configured to communicate with the Head End via one of the selected upstream channels.

32. The computer program product of claim 22 wherein said access network is a cable network implemented in accordance with a DOCSIS standardized protocol, and wherein said network nodes are cable modems.

33. A system for transmitting channel MAP messages to selected channels in an access network, the access network including a plurality of upstream and downstream channels for providing communication between network nodes and a Head End of the access network, the Head End including at least one interface for accessing the upstream and downstream channels, the system comprising:

means for identifying a first channel MAP message associated with a first upstream channel;

means for identifying particular downstream channels over which the first channel MAP message is to be transmitted, wherein each identified downstream channel is associated with a respective interface;

each of the identified downstream channels being used to communicate with at least one respective network node adapted to communicate with the Head End via the first upstream channel; and

means for transmitting the first channel MAP messages over the identified downstream channels.

34. The system of claim 33 further comprising means for forwarding a copy of the first channel MAP message only to each of the interfaces associated with each of the identified downstream channels, wherein each of the identified downstream channels communicates with at least one respective network configured to communicate with the Head End via the first upstream channel.

35. The system of claim 33 wherein each interface corresponds to a respective port on a respective line card.

36. The system of claim 35 further comprising:

means for forwarding a first copy of the first channel MAP message to a first line card associated with a first identified downstream channel; and

means for forwarding a second copy of the first channel MAP message to a second line card associated with a second identified downstream channel;

the first line card being different than the second line card.

37. The system of claim 33 wherein said downstream channel identifying means includes means for selecting a particular downstream channel as an identified downstream channel in response to a determination that the particular downstream channel is used to communicate with at least one network node which is configured to use the first upstream channel to communicate with the Head End.

38. The system of claim 33 wherein the identified downstream channels include only selected downstream channels which are used to communicate with network nodes configured to use the first upstream channel to communicate with the Head End.

39. The system of claim 33 wherein said access network is a cable network implemented in accordance with a DOCSIS standardized protocol, and wherein said network nodes are cable modems.

40. A system for forwarding channel MAP messages to selected channels in an access network, the access network including a plurality of upstream and downstream channels for providing communication between network nodes and a Head End of the access network, the system comprising:

at least one processor;

memory; and

at least one interface for accessing the upstream and downstream channels;

the system being configured or designed to identify a first channel MAP message associated with a first upstream channel;

the system being further configured or designed to identify at least one downstream channel on which the first channel MAP message is to be transmitted, wherein each identified downstream channel is associated with a respective interface;

the system being further configured or designed to forward a copy of the first channel MAP message to each of the interfaces associated with each of the identified downstream channels.

41. The system of claim 40, wherein the system is further configured or designed to forward a copy of the first channel MAP message only to each of the interfaces associated with each of the identified downstream channels, wherein each of the identified downstream channels communicates with at least one respective network node configured to communicate with the Head End via the first upstream channel.

42. The system of claim 40, wherein the system is further configured or designed to transmit the first channel MAP messages only on the identified downstream channels, wherein each of the identified downstream channels communicates with at least one respective network node configured to communicate with the Head End via the first upstream channel

43. The system of claim 40, wherein each interface corresponds to a respective port on a respective line card.

44. The system of claim 43, wherein the system is further configured or designed to forward a first copy of the first channel MAP message to a first line card associated with a first identified downstream channel; and

wherein the system is further configured or designed to forward a second copy of the first channel MAP message to a second line card associated with a second identified downstream channel;

the first line card being different than the second line card.

45. The system of claim 40 wherein the system is further configured or designed to select a particular downstream channel as an identified downstream channel in response to a determination that the particular downstream channel is used to communicate with at least one network node which is configured to use the first upstream channel to communicate with the Head End.

46. The system of claim 40 wherein the identified at least one downstream channel includes only selected downstream channels which are used to communicate with network nodes configured to use the first upstream channel to communicate with the Head End.

47. The system of claim 40, wherein the processor is configured to store into the memory membership information, the membership information relating to specific upstream and downstream channels being used by selected network nodes to communicate with the Head End.

48. The system of claim 47 wherein the membership information includes:

a first portion of information for identifying a particular network node;

a second portion of information for identifying an upstream channel used by the network node; and

a third portion of information for identifying a downstream channel used by the network node.

49. The system of claim 40, wherein the processor is configured to store into the memory activity information, the activity information identifying selected upstream channels in the access network, and further identifying, for each one of the selected upstream channels, any downstream channels which are being used to communicate with network nodes which are configured to communicate with the Head End via one of the selected upstream channels.

50. The system of claim 40 wherein said access network is a cable network implemented in accordance with a DOCSIS standardized protocol, and wherein said network nodes are cable modems.

51. A system for transmitting channel MAP messages to selected channels in an access network, the access network including a plurality of upstream and downstream channels for providing communication between network nodes and a Head End of the access network, the system comprising:

at least one processor;

memory; and

at least one interface for accessing the upstream and downstream channels;

the system being configured or designed to identify a first channel MAP message associated with a first upstream channel;

the system being further configured or designed to identify particular downstream channels over which the first channel MAP message is to be transmitted, wherein each identified downstream channel is associated with a respective interface;

each of the identified downstream channels being used to communicate with at least one respective network node adapted to communicate with the Head End via the first upstream channel; and

the system being further configured or designed to transmit the first channel MAP messages over the identified downstream channels.

52. The system of claim 51, wherein the system is further configured or designed to forward a copy of the first channel MAP message only to each of the interfaces associated with each of the identified downstream channels, wherein each of the identified downstream channels communicates with at least one respective network configured to communicate with the Head End via the first upstream channel.

53. The system of claim 51 wherein each interface corresponds to a respective port on a respective line card.

54. The system of claim 53, wherein the system is further configured or designed to forward a first copy of the first channel MAP message to a first line card associated with a first identified downstream channel; and

wherein the system is further configured or designed to forward a second copy of the first channel MAP message to a second line card associated with a second identified downstream channel;

the first line card being different than the second line card.

55. The system of claim 51, wherein the system or is further configured or designed to select a particular downstream channel as an identified downstream channel in response to a determination that the particular downstream channel is used to communicate with at least one network node which is configured to use the first upstream channel to communicate with the Head End.

56. The system of claim 51 wherein the identified downstream channels include only selected downstream channels which are used to communicate with network nodes configured to use the first upstream channel to communicate with the Head End.

57. The system of claim 51 wherein said access network is a cable network implemented in accordance with a DOCSIS standardized protocol, and wherein said network nodes are cable modems.